

# SEQUENCE LISTING

<110> CANFIELD, William

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TREATING GAUCHER'S DISEASE

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| tagatgttat ttaaataatg cagcaatc acctcttatt gacaatacct aaattatgag    | 4500 |
| ttttattaat atttaagact gtaaatggtc ttaaaccact aactactgaa gagctcaatg  | 4560 |
| attgacatct gaaatgcttt gtaattattg acttcagccc ctaagaatgc tatgatttca  | 4620 |
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Ser Ala Phe Gln Phe Gly Glu Val Val Leu Glu Trp Ser Arg Asp Gln  
 35 40 45

Tyr His Val Leu Phe Asp Ser Tyr Arg Asp Asn Ile Ala Gly Lys Ser  
 50 55 60

Phe Gln Asn Arg Leu Cys Leu Pro Met Pro Ile Asp Val Val Tyr Thr  
 65 70 75 80

Trp Val Asn Gly Thr Asp Leu Glu Leu Leu Lys Glu Leu Gln Gln Val  
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Arg Glu Gln Met Glu Glu Glu Gln Lys Ala Met Arg Glu Ile Leu Gly  
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10024197.122101

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Leu Pro Ala Asn Ile Thr Leu Lys Asp Val Pro Ser Leu Tyr Pro Ser  
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Phe His Ser Ala Ser Asp Ile Phe Asn Val Ala Lys Pro Lys Asn Pro  
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Ser Thr Asn Val Ser Val Val Val Phe Asp Ser Thr Lys Asp Val Glu  
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Asp Ala His Ser Gly Leu Leu Lys Gly Asn Ser Arg Gln Thr Val Trp  
195 200 205

Arg Gly Tyr Leu Thr Thr Asp Lys Glu Val Pro Gly Leu Val Leu Met  
210 215 220

Gln Asp Leu Ala Phe Leu Ser Gly Phe Pro Pro Thr Phe Lys Glu Thr  
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Asn Gln Leu Lys Thr Lys Leu Pro Glu Asn Leu Ser Ser Lys Val Lys  
245 250 255

Leu Leu Gln Leu Tyr Ser Glu Ala Ser Val Ala Leu Leu Lys Leu Asn  
260 265 270

Asn Pro Lys Asp Phe Gln Glu Leu Asn Lys Gln Thr Lys Lys Asn Met  
275 280 285

Thr Ile Asp Gly Lys Glu Leu Thr Ile Ser Pro Ala Tyr Leu Leu Trp  
290 295 300

Asp Leu Ser Ala Ile Ser Gln Ser Lys Gln Asp Glu Asp Ile Ser Ala  
305 310 315 320

Ser Arg Phe Glu Asp Asn Glu Glu Leu Arg Tyr Ser Leu Arg Ser Ile  
325 330 335

Glu Arg His Ala Pro Trp Val Arg Asn Ile Phe Ile Val Thr Asn Gly  
340 345 350

10024197 122101

Gln Ile Pro Ser Trp Leu Asn Leu Asp Asn Pro Arg Val Thr Ile Val  
355 360 365

Thr His Gln Asp Val Phe Arg Asn Leu Ser His Leu Pro Thr Phe Ser  
370 375 380

Ser Pro Ala Ile Glu Ser His Ile His Arg Ile Glu Gly Leu Ser Gln  
385 390 395 400

Lys Phe Ile Tyr Leu Asn Asp Asp Val Met Phe Gly Lys Asp Val Trp  
405 410 415

Pro Asp Asp Phe Tyr Ser His Ser Lys Gly Gln Lys Val Tyr Leu Thr  
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Trp Pro Val Pro Asn Cys Ala Glu Gly Cys Pro Gly Ser Trp Ile Lys  
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Asp Gly Tyr Cys Asp Lys Ala Cys Asn Asn Ser Ala Cys Asp Trp Asp  
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Gly Gly Asp Cys Ser Gly Asn Ser Gly Gly Ser Arg Tyr Ile Ala Gly  
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Gly Gly Ile Asn Ser Val Ser Tyr Cys Asn Gln Gly Cys Ala Asn Ser  
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Trp Leu Ala Asp Lys Phe Cys Asp Gln Ala Cys Asn Val Leu Ser Cys  
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Gly Phe Asp Ala Gly Asp Cys Gly Gln Asp His Phe His Glu Leu Tyr  
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Lys Val Ile Leu Leu Pro Asn Gln Thr His Tyr Ile Ile Pro Lys Gly  
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Glu Cys Leu Pro Tyr Phe Ser Phe Ala Glu Val Ala Lys Arg Gly Val  
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Glu Gly Ala Tyr Ser Asp Asn Pro Ile Ile Arg His Ala Ser Ile Ala

10024197-122101

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| Asn Lys Trp Lys Thr Ile His Leu Ile Met His Ser Gly Met Asn Ala |     |         |
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| Thr Thr Ile His Phe Asn Leu Thr Phe Gln Asn Thr Asn Asp Glu Glu |     |         |
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| Phe Lys Met Gln Ile Thr Val Glu Val Asp Thr Arg Glu Gly Pro Lys |     |         |
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| Leu Asn Ser Thr Ala Gln Lys Gly Tyr Glu Asn Leu Val Ser Pro Ile |     |         |
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| Thr Leu Leu Pro Glu Ala Glu Ile Leu Phe Glu Asp Ile Pro Lys Glu |     |         |
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| Lys Arg Phe Pro Lys Phe Lys Arg His Asp Val Asn Ser Thr Arg Arg |     |         |
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| Arg Ser Phe Leu Met Asn Ser Gln His Ala Lys Ile Lys Asn Gln Ala |     |         |
|   | 740 | 745 750 |
| Ile Ile Thr Asp Glu Thr Asn Asp Ser Leu Val Ala Pro Gln Glu Lys |     |         |
|   | 755 | 760 765 |
| Gln Val His Lys Ser Ile Leu Pro Asn Ser Leu Gly Val Ser Glu Arg |     |         |
|   | 770 | 775 780 |
| Leu Gln Arg Leu Thr Phe Pro Ala Val Ser Val Lys Val Asn Gly His |     |         |
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| Asp Gln Gly Gln Asn Pro Pro Leu Asp Leu Glu Thr Thr Ala Arg Phe |     |         |
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100449-1210

Arg Val Glu Thr His Thr Gln Lys Thr Ile Gly Gly Asn Val Thr Lys  
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Glu Lys Pro Pro Ser Leu Ile Val Pro Leu Glu Ser Gln Met Thr Lys  
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Glu Lys Lys Ile Thr Gly Lys Glu Lys Glu Asn Ser Arg Met Glu Glu  
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Asn Ala Glu Asn His Ile Gly Val Thr Glu Val Leu Leu Gly Arg Lys  
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Leu Gln His Tyr Thr Asp Ser Tyr Leu Gly Phe Leu Pro Trp Glu Lys  
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Lys Lys Tyr Phe Gln Asp Leu Leu Asp Glu Glu Glu Ser Leu Lys Thr  
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Gln Leu Ala Tyr Phe Thr Asp Ser Lys Asn Thr Gly Arg Gln Leu Lys  
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Phe Asp Lys Thr Ser Phe His Lys Val Arg His Ser Glu Asp Met Gln  
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Phe Ala Phe Ser Tyr Phe Tyr Tyr Leu Met Ser Ala Val Gln Pro Leu  
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10024197-122101

Asn Ile Ser Gln Val Phe Asp Glu Val Asp Thr Asp Gln Ser Gly Val  
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Leu Ser Asp Arg Glu Ile Arg Thr Leu Ala Thr Arg Ile His Glu Leu  
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Pro Leu Ser Leu Gln Asp Leu Thr Gly Leu Glu His Met Leu Ile Asn  
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Cys Ser Lys Met Leu Pro Ala Asp Ile Thr Gln Leu Asn Asn Ile Pro  
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Pro Thr Gln Glu Ser Tyr Tyr Asp Pro Asn Leu Pro Pro Val Thr Lys  
145 150 155 160

Ser Leu Val Thr Asn Cys Lys Pro Val Thr Asp Lys Ile His Lys Ala  
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Tyr Lys Asp Lys Asn Lys Tyr Arg Phe Glu Ile Met Gly Glu Glu Glu  
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Ile Ala Phe Lys Met Ile Arg Thr Asn Val Ser His Val Val Gly Gln  
195 200 205

Leu Asp Asp Ile Arg Lys Asn Pro Arg Lys Phe Val Cys Leu Asn Asp  
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Asn Ile Asp His Asn His Lys Asp Ala Gln Thr Val Lys Ala Val Leu  
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Arg Asp Phe Tyr Glu Ser Met Phe Pro Ile Pro Ser Gln Phe Glu Leu  
245 250 255

Pro Arg Glu Tyr Arg Asn Arg Phe Leu His Met His Glu Leu Gln Glu  
260 265 270

Trp Arg Ala Tyr Arg Asp Lys Leu Lys Phe Trp Thr His Cys Val Leu  
275 280 285

Ala Thr Leu Ile Met Phe Thr Ile Phe Ser Phe Phe Ala Glu Gln Leu  
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Ile Ala Leu Lys Arg Lys Ile Phe Pro Arg Arg Arg Ile His Lys Glu

305

310

315

320

Ala Ser Pro Asn Arg Ile Arg Val  
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 35 40 45

Leu Gln Ala Lys Arg Asp Pro Ser Pro Val Ser Gly Pro Val His Leu  
 50 55 60

Phe Arg Leu Ser Gly Lys Cys Phe Ser Leu Val Glu Ser Thr Tyr Lys  
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Tyr Glu Phe Cys Pro Phe His Asn Val Thr Gln His Glu Gln Thr Phe  
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Arg Trp Asn Ala Tyr Ser Gly Ile Leu Gly Ile Trp His Glu Trp Glu  
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Ile Ala Asn Asn Thr Phe Thr Gly Met Trp Met Arg Asp Gly Asp Ala  
 115 120 125

Cys Arg Ser Arg Ser Arg Gln Ser Lys Val Glu Leu Ala Cys Gly Lys  
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Ser Asn Arg Leu Ala His Val Ser Glu Pro Ser Thr Cys Val Tyr Ala  
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Leu Thr Phe Glu Thr Pro Leu Val Cys His Pro His Ala Leu Leu Val  
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Tyr Pro Thr Leu Pro Glu Ala Leu Gln Arg Gln Trp Asp Gln Val Glu  
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Gln Asp Leu Ala Asp Glu Leu Ile Thr Pro Gln Gly His Glu Lys Leu  
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10024497-122101

10024197-123101

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Asn Glu Pro Thr Gln Leu Glu Gly Gly Pro Asp Ser Leu Gly Phe Glu  
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Thr Leu Glu Asn Cys Arg Lys Ala His Lys Glu Leu Ser Lys Glu Ile  
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Lys Arg Leu Lys Gly Leu Leu Thr Gln His Gly Ile Pro Tyr Thr Arg  
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Pro Thr Glu Thr Ser Asn Leu Glu His Leu Gly His Glu Thr Pro Arg  
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<212> DNA

<213> Mus musculus

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Met Leu Phe Lys Leu Leu Gln Arg Gln Thr Tyr Thr Cys Leu Ser His  
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Arg Tyr Gly Leu Tyr Val Cys Phe Val Gly Val Val Val Thr Ile Val  
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Ser Ala Phe Gln Phe Gly Glu Val Val Leu Glu Trp Ser Arg Asp Gln

10024157-13104  
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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |  |  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|
| 35  | 40  | 45  |     |     |     |     |     |     |     |     |     |     |     |     |     |  |  |  |  |
| Tyr | His | Val | Leu | Phe | Asp | Ser | Tyr | Arg | Asp | Asn | Ile | Ala | Gly | Lys | Ser |  |  |  |  |
| 50  |     |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |  |  |  |  |
| Phe | Gln | Asn | Arg | Leu | Cys | Leu | Pro | Met | Pro | Ile | Asp | Val | Val | Tyr | Thr |  |  |  |  |
| 65  |     |     |     | 70  |     |     |     |     |     | 75  |     |     |     |     | 80  |  |  |  |  |
| Trp | Val | Asn | Gly | Thr | Asp | Leu | Glu | Leu | Leu | Lys | Glu | Leu | Gln | Gln | Val |  |  |  |  |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |  |  |  |  |
| Arg | Glu | His | Met | Glu | Glu | Glu | Gln | Arg | Ala | Met | Arg | Glu | Thr | Leu | Gly |  |  |  |  |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |  |  |  |  |
| Lys | Asn | Thr | Thr | Glu | Pro | Thr | Lys | Lys | Ser | Glu | Lys | Gln | Leu | Glu | Cys |  |  |  |  |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     | 125 |     |     |     |  |  |  |  |
| Leu | Leu | Thr | His | Cys | Ile | Lys | Val | Pro | Met | Leu | Val | Leu | Asp | Pro | Ala |  |  |  |  |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |  |  |  |  |
| Leu | Pro | Ala | Thr | Ile | Thr | Leu | Lys | Asp | Leu | Pro | Thr | Leu | Tyr | Pro | Ser |  |  |  |  |
| 145 |     |     |     |     | 150 |     |     |     | 155 |     |     |     |     |     | 160 |  |  |  |  |
| Phe | His | Ala | Ser | Ser | Asp | Met | Phe | Asn | Val | Ala | Lys | Pro | Lys | Asn | Pro |  |  |  |  |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |  |  |  |  |
| Ser | Thr | Asn | Val | Pro | Val | Val | Val | Phe | Asp | Thr | Thr | Lys | Asp | Val | Glu |  |  |  |  |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |  |  |  |  |
| Asp | Ala | His | Ala | Gly | Pro | Phe | Lys | Gly | Gly | Gln | Gln | Thr | Asp | Val | Trp |  |  |  |  |
|     | 195 |     |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |  |  |  |  |
| Arg | Ala | Tyr | Leu | Thr | Thr | Asp | Lys | Asp | Ala | Pro | Gly | Leu | Val | Leu | Ile |  |  |  |  |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |  |  |  |  |
| Gln | Gly | Leu | Ala | Phe | Leu | Ser | Gly | Phe | Pro | Pro | Thr | Phe | Lys | Glu | Thr |  |  |  |  |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |  |  |  |  |
| Ser | Gln | Leu | Lys | Thr | Lys | Leu | Pro | Arg | Lys | Ala | Phe | Pro | Leu | Lys | Ile |  |  |  |  |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |  |  |  |  |
| Lys | Leu | Leu | Arg | Leu | Tyr | Ser | Glu | Ala | Ser | Val | Ala | Leu | Leu | Lys | Leu |  |  |  |  |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     |     |     | 270 |  |  |  |  |



10024197-122101

Asn Asn Pro Lys Gly Phe Gln Glu Leu Asn Lys Gln Thr Lys Lys Asn  
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Met Thr Ile Asp Gly Lys Glu Leu Thr Ile Ser Pro Ala Tyr Leu Leu  
290 295 300

Trp Asp Leu Ser Ala Ile Ser Gln Ser Lys Gln Asp Glu Asp Ala Ser  
305 310 315 320

Ala Ser Arg Phe Glu Asp Asn Glu Glu Leu Arg Tyr Ser Leu Arg Ser  
325 330 335

Ile Glu Arg His Ala Pro Trp Val Arg Asn Ile Phe Ile Val Thr Asn  
340 345 350

Gly Gln Ile Pro Ser Trp Leu Asn Leu Asp Asn Pro Arg Val Thr Ile  
355 360 365

Val Thr His Gln Asp Ile Phe Gln Asn Leu Ser His Leu Pro Thr Phe  
370 375 380

Ser Ser Pro Ala Ile Glu Ser His Ile His Arg Ile Glu Gly Leu Ser  
385 390 395 400

Gln Lys Phe Ile Tyr Leu Asn Asp Asp Val Met Phe Gly Lys Asp Val  
405 410 415

Trp Pro Asp Asp Phe Tyr Ser His Ser Lys Gly Gln Lys Val Tyr Leu  
420 425 430

Thr Trp Pro Val Pro Asn Cys Ala Glu Gly Cys Pro Gly Ser Trp Ile  
435 440 445

Lys Asp Gly Tyr Cys Asp Lys Ala Cys Asn Thr Ser Pro Cys Asp Trp  
450 455 460

Asp Gly Gly Asn Cys Ser Gly Asn Thr Ala Gly Asn Arg Phe Val Ala  
465 470 475 480

Arg Gly Gly Gly Thr Gly Asn Ile Gly Ala Gly Gln His Trp Gln Phe  
485 490 495

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Gly Gly Gly Ile Asn Thr Ile Ser Tyr Cys Asn Gln Gly Cys Ala Asn  
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Ser Trp Leu Ala Asp Lys Phe Cys Asp Gln Ala Cys Asn Val Leu Ser  
515 520 525

Cys Gly Phe Asp Ala Gly Asp Cys Gly Gln Asp His Phe His Glu Leu  
530 535 540

Tyr Lys Val Thr Leu Leu Pro Asn Gln Thr His Tyr Val Val Pro Lys  
545 550 555 560

Gly Glu Tyr Leu Ser Tyr Phe Ser Phe Ala Asn Ile Ala Arg Lys Arg  
565 570 575

Ile Glu Gly Thr Tyr Ser Asp Asn Pro Ile Ile Arg His Ala Ser Ile  
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Ala Asn Lys Trp Lys Thr Leu His Leu Ile Met Pro Gly Gly Met Asn  
595 600 605

Ala Thr Thr Ile Tyr Phe Asn Leu Thr Leu Gln Asn Ala Asn Asp Glu  
610 615 620

Glu Phe Lys Ile Gln Ile Ala Val Glu Val Asp Thr Arg Glu Ala Pro  
625 630 635 640

Lys Leu Asn Ser Thr Thr Gln Lys Ala Tyr Glu Ser Leu Val Ser Pro  
645 650 655

Val Thr Pro Leu Pro Gln Ala Asp Val Pro Phe Glu Asp Val Pro Lys  
660 665 670

Glu Lys Arg Phe Pro Lys Ile Arg Arg His Asp Val Asn Ala Thr Gly  
675 680 685

Arg Phe Gln Glu Glu Val Lys Ile Pro Arg Val Asn Ile Ser Leu Leu  
690 695 700

Pro Lys Glu Ala Gln Val Arg Leu Ser Asn Leu Asp Leu Gln Leu Glu  
705 710 715 720

1002497.123101

Arg Gly Asp Ile Thr Leu Lys Gly Tyr Asn Leu Ser Lys Ser Ala Leu  
725 730 735

Leu Arg Ser Phe Leu Gly Asn Ser Leu Asp Thr Lys Ile Lys Pro Gln  
740 745 750

Ala Arg Thr Asp Glu Thr Lys Gly Asn Leu Glu Val Pro Gln Glu Asn  
755 760 765

Pro Ser His Arg Arg Pro His Gly Phe Ala Gly Glu His Arg Ser Glu  
770 775 780

Arg Trp Thr Ala Pro Ala Glu Thr Val Thr Val Lys Gly Arg Asp His  
785 790 795 800

Ala Leu Asn Pro Pro Pro Val Leu Glu Thr Asn Ala Arg Leu Ala Gln  
805 810 815

Pro Thr Leu Gly Val Thr Val Ser Lys Glu Asn Leu Ser Pro Leu Ile  
820 825 830

Val Pro Pro Glu Ser His Leu Pro Lys Glu Glu Glu Ser Asp Arg Ala  
835 840 845

Glu Gly Asn Ala Val Pro Val Lys Glu Leu Val Pro Gly Arg Arg Leu  
850 855 860

Gln Gln Asn Tyr Pro Gly Phe Leu Pro Trp Glu Lys Lys Lys Tyr Phe  
865 870 875 880

Gln Asp Leu Leu Asp Glu Glu Glu Ser Leu Lys Thr Gln Leu Ala Tyr  
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10024197-122404

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Ile Asp Arg Ile Val Met Gln Glu Leu Gln Asp Met Phe Pro Glu Glu  
35 40 45

Phe Asp Lys Thr Ser Phe His Lys Val Arg His Ser Glu Asp Met Gln  
50 55 60

Phe Ala Phe Ser Tyr Phe Tyr Tyr Leu Met Ser Ala Val Gln Pro Leu  
65 70 75 80

Asn Ile Ser Gln Val Phe His Glu Val Asp Thr Asp Gln Ser Gly Val  
85 90 95

Leu Ser Asp Arg Glu Ile Arg Thr Leu Ala Thr Arg Ile His Asp Leu  
100 105 110

Pro Leu Ser Leu Gln Asp Leu Thr Gly Leu Glu His Met Leu Ile Asn  
115 120 125

Cys Ser Lys Met Leu Pro Ala Asn Ile Thr Gln Leu Asn Asn Ile Pro  
130 135 140

Pro Thr Gln Glu Ala Tyr Tyr Asp Pro Asn Leu Pro Pro Val Thr Lys  
145 150 155 160

Ser Leu Val Thr Asn Cys Lys Pro Val Thr Asp Lys Ile His Lys Ala  
165 170 175

Tyr Lys Asp Lys Asn Lys Tyr Arg Phe Glu Ile Met Gly Glu Glu Glu  
180 185 190

Ile Ala Phe Lys Met Ile Arg Thr Asn Val Ser His Val Val Gly Gln  
195 200 205

Leu Asp Asp Ile Arg Lys Asn Pro Arg Lys Phe Val Cys Leu Asn Asp  
210 215 220

Asn Ile Asp His Asn His Lys Asp Ala Arg Thr Val Lys Ala Val Leu  
225 230 235 240

1004197 12101

Arg Asp Phe Tyr Glu Ser Met Phe Pro Ile Pro Ser Gln Phe Glu Leu  
245 250 255

Pro Arg Glu Tyr Arg Asn Arg Phe Leu His Met His Glu Leu Gln Glu  
260 265 270

Trp Arg Ala Tyr Arg Asp Lys Leu Lys Phe Trp Thr His Cys Val Leu  
275 280 285

Ala Thr Leu Ile Ile Phe Thr Ile Phe Ser Phe Phe Ala Glu Gln Ile  
290 295 300

Ile Ala Leu Lys Arg Lys Ile Phe Pro Arg Arg Arg Ile His Lys Glu  
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Ala Ser Pro Asp Arg Ile Arg Val  
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cattcgggtg agcggatcac ggtcctgcgg cttggggacc gagcctggct gggtcttctg 180  
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caagagagag ccttcagctg tatcccgcaa attaagagaa attaatttca aacgatttag 300  
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gcatgtgatc agagatctga atcaciaaagc tgggcctgcg tggtaaagca ggtcctttct 480  
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10034197.123101

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| caggaacaag catgggaatc ctgccacaga caaccagttc tgtggtctgg agatgagttt  | 780  |
| gtcagtcctt aggagttagg tcagcctgcc tctgcattcc caataattta ggaaaggagc  | 840  |
| ttggggcggt ctggccttga tggttagtgc cctcctgcc aacctagctt ccagctttag   | 900  |
| gggtagcaga gtttataccg atgctaaact gctgttgtgt tcttccccag ggcccccgca  | 960  |
| tctcttcaga cttgctggca agtgcttttag cctagtggag tccacgtgag tgccaggctg | 1020 |
| gtgggtggag tgggaggagt ctgcagagct cctgatgtgc ctgtgtttcc caggtaacaag | 1080 |
| tatgaattct gccctttcca caacgtcacc cagcacgagc agaccttccg ctggaatgcc  | 1140 |
| tacagcggga tccttggcat ctggcatgag tgggaaatca tcaacaatac cttcaagggc  | 1200 |
| atgtggatga ctgatgggga ctctgccac tcccgagcc ggagagcaa ggtggagctc     | 1260 |
| acctgtggaa agatcaaccg actggcccac gtgtctgagc caagcacctg tgtctatgca  | 1320 |
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| acaccacagg gctatgagaa gttgctaagg gtactttttg aggatgctgg ctacttaaag  | 1500 |
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| ggtcagctgc cagccactcc ggggcctgca gcactggggc agatctttat tgctacctat  | 1740 |
| tctggcagaa accactcact ctacgacct gggtcagcag ctccccatag gtgcaatcgc   | 1800 |
| agcagagcat ctgcggagtg acccaggact acgtgggaac atcctgtgag caagggtggc  | 1860 |
| acgaagaata gaaatatcct gagctttgag tgtcctttca cagagtgaac aaaactggtg  | 1920 |
| tgggtgtagac acggcttctt ttggcatatt ctagatcaga cagtgtcact gacaaacaag | 1980 |
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Gln Gly Pro Ala Pro Ala Cys Ala Gly Lys Met Lys Val Val Glu Glu  
20 25 30

Pro Asn Thr Phe Gly Leu Asn Asn Pro Phe Leu Pro Gln Ala Ser Arg  
35 40 45

Leu Gln Pro Lys Arg Glu Pro Ser Ala Val Ser Gly Pro Leu His Leu  
50 55 60

Phe Arg Leu Ala Gly Lys Cys Phe Ser Leu Val Glu Ser Thr Tyr Lys  
65 70 75 80

Tyr Glu Phe Cys Pro Phe His Asn Val Thr Gln His Glu Gln Thr Phe  
85 90 95

Arg Trp Asn Ala Tyr Ser Gly Ile Leu Gly Ile Trp His Glu Trp Glu  
100 105 110

Ile Ile Asn Asn Thr Phe Lys Gly Met Trp Met Thr Asp Gly Asp Ser  
115 120 125

Cys His Ser Arg Ser Arg Gln Ser Lys Val Glu Leu Thr Cys Gly Lys  
130 135 140

Ile Asn Arg Leu Ala His Val Ser Glu Pro Ser Thr Cys Val Tyr Ala  
145 150 155 160

Leu Thr Phe Glu Thr Pro Leu Val Cys His Pro His Ser Leu Leu Val  
165 170 175

Tyr Pro Thr Leu Ser Glu Ala Leu Gln Gln Arg Leu Asp Gln Val Glu  
180 185 190

Gln Asp Leu Ala Asp Glu Leu Ile Thr Pro Gln Gly Tyr Glu Lys Leu  
195 200 205

Leu Arg Val Leu Phe Glu Asp Ala Gly Tyr Leu Lys Val Pro Gly Glu  
210 215 220

Thr His Pro Thr Gln Leu Ala Gly Gly Ser Lys Gly Leu Gly Leu Glu  
225 230 235 240

Thr Leu Asp Asn Cys Arg Lys Ala His Ala Glu Leu Ser Gln Glu Val  
245 250 255

Gln Arg Leu Thr Ser Leu Leu Gln Gln His Gly Ile Pro His Thr Gln  
260 265 270

Pro Thr Glu Thr Thr His Ser Gln His Leu Gly Gln Gln Leu Pro Ile  
275 280 285

Gly Ala Ile Ala Ala Glu His Leu Arg Ser Asp Pro Gly Leu Arg Gly  
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Asn Ile Leu  
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taaccccaaa ggtttccccc agctgaacaa gcagaccaag aagaacatga gcatcagtg 180  
gaaggaactg gccatcagcc ctgcctatct gctgtgggac ctgagcgcca tcagccagtc 240  
caagcaggat gaagatgtgt ctgccagccg cttcgaggat aacgaagagc tgaggtactc 300  
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aatcatgatc tcagtagtat tcctctgaaa tggcacacat ttttctaata agaacttgaa 420  
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<400> 14

Phe Pro Pro Thr Phe Lys Glu Thr Ser Gln Leu Lys Thr Lys Leu Pro  
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10024197-123104



1002437-123101

Glu Asn Leu Ser Ser Lys Ile Lys Leu Leu Gln Leu Tyr Ser Glu Ala  
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Ser Val Ala Leu Leu Lys Leu Asn Asn Pro Lys Gly Phe Pro Glu Leu  
35 40 45

Asn Lys Gln Thr Lys Lys Asn Met Ser Ile Ser Gly Lys Glu Leu Ala  
50 55 60

Ile Ser Pro Ala Tyr Leu Leu Trp Asp Leu Ser Ala Ile Ser Gln Ser  
65 70 75 80

Lys Gln Asp Glu Asp Val Ser Ala Ser Arg Phe Glu Asp Asn Glu Glu  
85 90 95

Leu Arg Tyr Ser Leu Arg Ser Ile Glu Arg His Asp Ser Met Ser Pro  
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Leu

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Ser Leu Glu Lys His Ala Ala Trp Ile Arg His Val Tyr Ile Val Thr  
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Asn Gly Gln Ile Pro Ser Trp Leu Asp Leu Ser Tyr Glu Arg Val Thr  
35 40 45

Val Val Pro His Glu Val Leu Ala Pro Asp Pro Asp Gln Leu Pro Thr  
50 55 60

Phe Ser Ser Ser Ala Ile Glu Thr Phe Leu His Arg Ile Pro Lys Leu  
65 70 75 80

Ser Lys Arg Phe Leu Tyr Leu Asn Asp Asp Ile Phe Leu Gly Ala Pro  
85 90 95

Leu Tyr Pro Glu Asp Leu Tyr Thr Glu Ala Glu Gly Val Arg Val Tyr  
100 105 110

Gln Ala Trp Met Val Pro Gly Cys Ala Leu Asp Cys Pro Trp Thr Tyr  
115 120 125

Ile Gly Asp Gly Ala Cys Asp Arg His Cys Asn Ile Asp Ala Cys Gln  
130 135 140

Phe Asp Gly Gly Asp Cys Ser Glu Thr Gly Pro Ala Ser Asp Ala His  
145 150 155 160

Val Ile Pro Pro Ser Lys Glu Val Leu Glu Val Gln Pro Ala Ala Val  
165 170 175

Pro Gln Ser Arg Val His Arg Phe Pro Gln Met Gly Leu Gln Lys Leu  
180 185 190

Phe Arg Arg Ser Ser Ala Asn Phe Lys Asp Val Met Arg His Arg Asn  
195 200 205

Val Ser Thr Leu Lys Glu Leu Arg Arg Ile Val Glu Arg Phe Asn Lys  
210 215 220

10024197-123401

Ala Lys Leu Met Ser Leu Asn Pro Glu Leu Glu Thr Ser Ser Ser Glu  
225 230 235 240

Pro Gln Thr Thr Gln Arg His Gly Leu Arg Lys Glu Asp Phe Lys Ser  
245 250 255

Ser Thr Asp Ile Tyr Ser His Ser Leu Ile Ala Thr Asn Met Leu Leu  
260 265 270

Asn Arg Ala Tyr Gly Phe Lys Ala Arg His Val Leu Ala His Val Gly  
275 280 285

Phe Leu Ile Asp Lys Asp Ile Val Glu Ala Met Gln Arg Arg Phe His  
290 295 300

Gln Gln Ile Leu Asp Thr Ala His Gln Arg Phe Arg Ala Pro Thr Asp  
305 310 315 320

Leu Gln Tyr Ala Phe Ala Tyr Tyr Ser Phe Leu Met Ser Glu Thr Lys  
325 330 335

Val Met Ser Val Glu Glu Ile Phe Asp Glu Phe Asp Thr Asp Gly Ser  
340 345 350

Ala Thr Trp Ser Asp Arg Glu Val Arg Thr Phe Leu Thr Arg Ile Tyr  
355 360 365

Gln Pro Pro Leu Asp Trp Ser Ala Met Arg Tyr Phe Glu Glu Val Val  
370 375 380

Gln Asn Cys Thr Arg Asn Leu Gly Met His Leu Lys Val Asp Thr Val  
385 390 395 400

Glu His Ser Thr Leu Val Tyr Glu Arg Tyr Glu Asp Ser Asn Leu Pro  
405 410 415

Thr Ile Thr Arg Asp Leu Val Val Arg Cys Pro Leu Leu Ala Glu Ala  
420 425 430

Leu Ala Ala Asn Phe Ala Val Arg Pro Lys Tyr Asn Phe His Val Ser  
435 440 445

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Pro Lys Arg Thr Ser His Ser Asn Phe Met Met Leu Thr Ser Asn Leu  
450 455 460

Thr Glu Val Val Glu Ser Leu Asp Arg Leu Arg Arg Asn Pro Arg Lys  
465 470 475 480

Phe Asn Cys Ile Asn Asp Asn Leu Asp Ala Asn Arg Gly Glu Asp Asn  
485 490 495

Glu Asp Gly Ala Pro Ser  
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<211> 2183

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| ttccgcatga actcggggcga gtgcctgggg aacgtggtga gcgacgagcg gcgggtgagc | 480  |
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| gggtacctgt ctgaggagga ggtgctggac actgagaacc catttgtagc gctgctgagt  | 600  |
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| gagcagcgtg gcatcaacct gtgggaaatg gcggagttcc tgctgaaaca ggacgtggtc  | 840  |
| aacgccatca acctggatgg ggggtggtct gccacotttg tgctcaacgg gaccttggcc  | 900  |
| agttaccctg cagatcactg ccaggacaac atgtggcgct gtccccgcca agtgtccacc  | 960  |
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Asp Asp Asp Leu Leu Leu Pro Tyr Pro Arg Ala Arg Ala Arg Leu Pro

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| Arg | Asp | Cys | Thr | Arg | Val | Arg | Ala | Gly | Asn | Arg | Glu | His | Glu | Ser | Trp |
| 50  |     |     |     |     |     | 55  |     |     |     |     | 60  |     |     |     |     |
| Pro | Pro | Pro | Pro | Ala | Thr | Pro | Gly | Ala | Gly | Gly | Leu | Ala | Val | Arg | Thr |
| 65  |     |     |     |     | 70  |     |     |     |     | 75  |     |     |     |     | 80  |
| Phe | Val | Ser | His | Phe | Arg | Asp | Arg | Ala | Val | Ala | Gly | His | Leu | Thr | Arg |
|     |     |     |     | 85  |     |     |     |     | 90  |     |     |     |     | 95  |     |
| Ala | Val | Glu | Pro | Leu | Arg | Thr | Phe | Ser | Val | Leu | Glu | Pro | Gly | Gly | Pro |
|     |     |     | 100 |     |     |     |     | 105 |     |     |     |     | 110 |     |     |
| Gly | Gly | Cys | Ala | Ala | Arg | Arg | Arg | Ala | Thr | Val | Glu | Glu | Thr | Ala | Arg |
|     |     | 115 |     |     |     |     | 120 |     |     |     |     |     | 125 |     |     |
| Ala | Ala | Asp | Cys | Arg | Val | Ala | Gln | Asn | Gly | Gly | Phe | Phe | Arg | Met | Asn |
|     | 130 |     |     |     |     | 135 |     |     |     |     | 140 |     |     |     |     |
| Ser | Gly | Glu | Cys | Leu | Gly | Asn | Val | Val | Ser | Asp | Glu | Arg | Arg | Val | Ser |
| 145 |     |     |     |     | 150 |     |     |     |     | 155 |     |     |     |     | 160 |
| Ser | Ser | Gly | Gly | Leu | Gln | Asn | Ala | Gln | Phe | Gly | Ile | Arg | Arg | Asp | Gly |
|     |     |     |     | 165 |     |     |     |     | 170 |     |     |     |     | 175 |     |
| Thr | Leu | Val | Thr | Gly | Tyr | Leu | Ser | Glu | Glu | Glu | Val | Leu | Asp | Thr | Glu |
|     |     |     | 180 |     |     |     |     | 185 |     |     |     |     | 190 |     |     |
| Asn | Pro | Phe | Val | Gln | Leu | Leu | Ser | Gly | Val | Val | Trp | Leu | Ile | Arg | Asn |
|     |     | 195 |     |     |     |     | 200 |     |     |     |     | 205 |     |     |     |
| Gly | Ser | Ile | Tyr | Ile | Asn | Glu | Ser | Gln | Ala | Thr | Glu | Cys | Asp | Glu | Thr |
|     | 210 |     |     |     |     | 215 |     |     |     |     | 220 |     |     |     |     |
| Gln | Glu | Thr | Gly | Ser | Phe | Ser | Lys | Phe | Val | Asn | Val | Ile | Ser | Ala | Arg |
| 225 |     |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     | 240 |
| Thr | Ala | Ile | Gly | His | Asp | Arg | Lys | Gly | Gln | Leu | Val | Leu | Phe | His | Ala |
|     |     |     |     | 245 |     |     |     |     | 250 |     |     |     |     | 255 |     |
| Asp | Gly | His | Thr | Glu | Gln | Arg | Gly | Ile | Asn | Leu | Trp | Glu | Met | Ala | Glu |
|     |     |     | 260 |     |     |     |     | 265 |     |     |     |     | 270 |     |     |

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Phe Leu Leu Lys Gln Asp Val Val Asn Ala Ile Asn Leu Asp Gly Gly  
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Gly Ser Ala Thr Phe Val Leu Asn Gly Thr Leu Ala Ser Tyr Pro Ser  
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Asp His Cys Gln Asp Asn Met Trp Arg Cys Pro Arg Gln Val Ser Thr  
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Val Val Cys Val His Glu Pro Arg Cys Gln Pro Pro Asp Cys His Gly  
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His Gly Thr Cys Val Asp Gly His Cys Gln Cys Thr Gly His Phe Trp  
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Arg Gly Pro Gly Cys Asp Glu Leu Asp Cys Gly Pro Ser Asn Cys Ser  
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Gln His Gly Leu Cys Thr Glu Thr Gly Cys Arg Cys Asp Ala Gly Trp  
370 375 380

Thr Gly Ser Asn Cys Ser Glu Glu Cys Pro Leu Gly Trp His Gly Pro  
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Gly Cys Gln Arg Arg Cys Lys Cys Glu His His Cys Pro Cys Asp Pro  
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Lys Thr Gly Asn Cys Ser Val Ser Arg Val Lys Gln Cys Leu Gln Pro  
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Pro Glu Ala Thr Leu Arg Ala Gly Glu Leu Ser Phe Phe Thr Arg Thr  
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Ala Trp Leu Ala Leu Thr Leu Ala Leu Ala Phe Leu Leu Leu Ile Ser  
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Ile Ala Ala Asn Leu Ser Leu Leu Leu Ser Arg Ala Glu Arg Asn Arg  
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Arg Leu His Gly Asp Tyr Ala Tyr His Pro Leu Gln Glu Met Asn Gly  
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Glu Pro Leu Ala Ala Glu Lys Glu Gln Pro Gly Gly Ala His Asn Pro  
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Phe Lys Asp  
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Glu Ser Trp Pro Pro Pro Pro Leu Ala Thr His Glu Pro Arg Ala Pro  
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Ser His His Ala Ala Val Arg Thr Phe Val Ser His Phe Glu Gly Arg  
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Ala Val Ala Gly His Leu Thr Arg Val Ala Asp Pro Leu Arg Thr Phe  
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Ser Val Leu Glu Pro Gly Gly Ala Gly Gly Cys Gly Gly Arg Ser Ala  
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100249 123104

Ala Ala Thr Val Glu Asp Thr Ala Val Arg Ala Gly Cys Arg Ile Ala  
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Gln Asn Gly Gly Phe Phe Arg Met Ser Thr Gly Glu Cys Leu Gly Asn  
115 120 125

Val Val Ser Asp Gly Arg Leu Val Ser Ser Ser Gly Gly Leu Gln Asn  
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Ala Gln Phe Gly Ile Arg Arg Asp Gly Thr Ile Val Thr Gly Ser Cys  
145 150 155 160

Leu Glu Glu Glu Val Leu Asp Pro Val Asn Pro Phe Val Gln Leu Leu  
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Ser Gly Val Val Trp Leu Ile Arg Asn Gly Asn Ile Tyr Ile Asn Glu  
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Ser Gln Ala Ile Glu Cys Asp Glu Thr Gln Glu Thr Gly Ser Phe Ser  
195 200 205

Lys Phe Val Asn Val Met Ser Ala Arg Thr Ala Val Gly His Asp Arg  
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Glu Gly Gln Leu Ile Leu Phe His Ala Asp Gly Gln Thr Glu Gln Arg  
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Gly Leu Asn Leu Trp Glu Met Ala Glu Phe Leu Arg Gln Gln Asp Val  
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Val Asn Ala Ile Asn Leu Asp Gly Gly Gly Ser Ala Thr Phe Val Leu  
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Arg Cys Gln Pro Pro Asp Cys Ser Gly His Gly Thr Cys Val Asp Gly  
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His Cys Glu Cys Thr Ser His Phe Trp Arg Gly Glu Ala Cys Ser Glu  
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Leu Asp Cys Gly Pro Ser Asn Cys Ser Gln His Gly Leu Cys Thr Ala  
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Gly Cys His Cys Asp Ala Gly Trp Thr Gly Ser Asn Cys Ser Glu Glu  
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Glu His Gln Cys Phe Cys Asp Pro Gln Thr Gly Asn Cys Ser Ile Ser  
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Gln Val Arg Gln Cys Leu Gln Pro Thr Glu Ala Thr Pro Arg Ala Gly  
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Leu Ile Phe Leu Leu Leu Ile Ser Thr Gly Val Asn Val Ser Leu Phe  
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Leu Gly Ser Arg Ala Glu Arg Asn Arg His Leu Asp Gly Asp Tyr Val  
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 <213> Homo sapiens

<400> 25

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Ala Val Ser Trp Ala Ser Gly Ala Arg Pro Cys Ile Pro Lys Ser Phe  
 35 40 45

10024197 123101

Gly Tyr Ser Ser Val Val Cys Val Cys Asn Ala Thr Tyr Cys Asp Ser  
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Phe Asp Pro Pro Thr Phe Pro Ala Leu Gly Thr Phe Ser Arg Tyr Glu  
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Ser Thr Arg Ser Gly Arg Arg Met Glu Leu Ser Met Gly Pro Ile Gln  
85 90 95

Ala Asn His Thr Gly Thr Gly Leu Leu Leu Thr Leu Gln Pro Glu Gln  
100 105 110

Lys Phe Gln Lys Val Lys Gly Phe Gly Gly Ala Met Thr Asp Ala Ala  
115 120 125

Ala Leu Asn Ile Leu Ala Leu Ser Pro Pro Ala Gln Asn Leu Leu Leu  
130 135 140

Lys Ser Tyr Phe Ser Glu Glu Gly Ile Gly Tyr Asn Ile Ile Arg Val  
145 150 155 160

Pro Met Ala Ser Cys Asp Phe Ser Ile Arg Thr Tyr Thr Tyr Ala Asp  
165 170 175

Thr Pro Asp Asp Phe Gln Leu His Asn Phe Ser Leu Pro Glu Glu Asp  
180 185 190

Thr Lys Leu Lys Ile Pro Leu Ile His Arg Ala Leu Gln Leu Ala Gln  
195 200 205

Arg Pro Val Ser Leu Leu Ala Ser Pro Trp Thr Ser Pro Thr Trp Leu  
210 215 220

Lys Thr Asn Gly Ala Val Asn Gly Lys Gly Ser Leu Lys Gly Gln Pro  
225 230 235 240

Gly Asp Ile Tyr His Gln Thr Trp Ala Arg Tyr Phe Val Lys Phe Leu  
245 250 255

Asp Ala Tyr Ala Glu His Lys Leu Gln Phe Trp Ala Val Thr Ala Glu  
260 265 270

Asn Glu Pro Ser Ala Gly Leu Leu Ser Gly Tyr Pro Phe Gln Cys Leu

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| Pro Thr Leu Ala Asn Ser Thr His His Asn Val Arg Leu Leu Met Leu |     |         |
| 305   | 310 | 315 320 |
| Asp Asp Gln Arg Leu Leu Leu Pro His Trp Ala Lys Val Val Leu Thr |     |         |
| 325   | 330 | 335     |
| Asp Pro Glu Ala Ala Lys Tyr Val His Gly Ile Ala Val His Trp Tyr |     |         |
| 340   | 345 | 350     |
| Leu Asp Phe Leu Ala Pro Ala Lys Ala Thr Leu Gly Glu Thr His Arg |     |         |
| 355   | 360 | 365     |
| Leu Phe Pro Asn Thr Met Leu Phe Ala Ser Glu Ala Cys Val Gly Ser |     |         |
| 370   | 375 | 380     |
| Lys Phe Trp Glu Gln Ser Val Arg Leu Gly Ser Trp Asp Arg Gly Met |     |         |
| 385   | 390 | 395 400 |
| Gln Tyr Ser His Ser Ile Ile Thr Asn Leu Leu Tyr His Val Val Gly |     |         |
| 405   | 410 | 415     |
| Trp Thr Asp Trp Asn Leu Ala Leu Asn Pro Glu Gly Gly Pro Asn Trp |     |         |
| 420   | 425 | 430     |
| Val Arg Asn Phe Val Asp Ser Pro Ile Ile Val Asp Ile Thr Lys Asp |     |         |
| 435   | 440 | 445     |
| Thr Phe Tyr Lys Gln Pro Met Phe Tyr His Leu Gly His Phe Ser Lys |     |         |
| 450   | 455 | 460     |
| Phe Ile Pro Glu Gly Ser Gln Arg Val Gly Leu Val Ala Ser Gln Lys |     |         |
| 465   | 470 | 475 480 |
| Asn Asp Leu Asp Ala Val Ala Leu Met His Pro Asp Gly Ser Ala Val |     |         |
| 485   | 490 | 495     |
| Val Val Val Leu Asn Arg Ser Ser Lys Asp Val Pro Leu Thr Ile Lys |     |         |
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<400> 26

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35 40 45

Gly Tyr Ser Ser Val Val Cys Val Cys Asn Ala Thr Tyr Cys Asp Ser  
50 55 60

Phe Asp Pro Pro Thr Phe Pro Ala Leu Gly Thr Phe Ser Arg Tyr Glu  
65 70 75 80

Ser Thr Arg Ser Gly Arg Arg Met Glu Leu Ser Met Gly Pro Ile Gln  
85 90 95

Ala Asn His Thr Gly Thr Gly Leu Leu Leu Thr Leu Gln Pro Glu Gln  
100 105 110

Lys Phe Gln Lys Val Lys Gly Phe Gly Gly Ala Met Thr Asp Ala Ala  
115 120 125

Ala Leu Asn Ile Leu Ala Leu Ser Pro Pro Ala Gln Asn Leu Leu Leu  
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Lys Ser Tyr Phe Ser Glu Glu Gly Ile Gly Tyr Asn Ile Ile Arg Val  
145 150 155 160

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Pro Met Ala Ser Cys Asp Phe Ser Ile Arg Thr Tyr Thr Tyr Ala Asp  
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Thr Pro Asp Asp Phe Gln Leu His Asn Phe Ser Leu Pro Glu Glu Asp  
180 185 190

Thr Lys Leu Lys Ile Pro Leu Ile His Arg Ala Leu Gln Leu Ala Gln  
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Arg Pro Val Ser Leu Leu Ala Ser Pro Trp Thr Ser Pro Thr Trp Leu  
210 215 220

Lys Thr Asn Gly Ala Val Asn Gly Lys Gly Ser Leu Lys Gly Gln Pro  
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Gly Asp Ile Tyr His Gln Thr Trp Ala Arg Tyr Phe Val Lys Phe Leu  
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Asp Ala Tyr Ala Glu His Lys Leu Gln Phe Trp Ala Val Thr Ala Glu  
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Gly Phe Thr Pro Glu His Gln Arg Asp Phe Ile Ala Arg Asp Leu Gly  
290 295 300

Pro Thr Leu Ala Asn Ser Thr His His Asn Val Arg Leu Leu Met Leu  
305 310 315 320

Asp Asp Gln Arg Leu Leu Leu Pro His Trp Ala Lys Val Val Leu Thr  
325 330 335

Asp Pro Glu Ala Ala Lys Tyr Val His Gly Ile Ala Val His Trp Tyr  
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Leu Asp Phe Leu Ala Pro Ala Lys Ala Thr Leu Gly Glu Thr His Arg  
355 360 365

Leu Phe Pro Asn Thr Met Leu Phe Ala Ser Glu Ala Cys Val Gly Ser  
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Lys Phe Trp Glu Gln Ser Val Arg Leu Gly Ser Trp Asp Arg Gly Met

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10024197 12101

385 390 395 400

Gln Tyr Ser His Ser Ile Ile Thr Asn Leu Leu Tyr His Val Val Gly  
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420 425 430

Val Arg Asn Phe Val Asp Ser Pro Ile Ile Val Asp Ile Thr Lys Asp  
435 440 445

Thr Phe Tyr Lys Gln Pro Met Phe Tyr His Leu Gly His Phe Ser Lys  
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Phe Ile Pro Glu Gly Ser Gln Arg Val Gly Leu Val Ala Ser Gln Lys  
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Asn Asp Leu Asp Ala Val Ala Leu Met His Pro Asp Gly Ser Ala Val  
485 490 495

Val Val Val Leu Asn Arg Ser Ser Lys Asp Val Pro Leu Thr Ile Lys  
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